

The SCOPE Model methodology to examine and characterize INTEROPERABILITY of System-of-Systems, Capabilities, Operations, Programs, and Enterprises (SCOPE)

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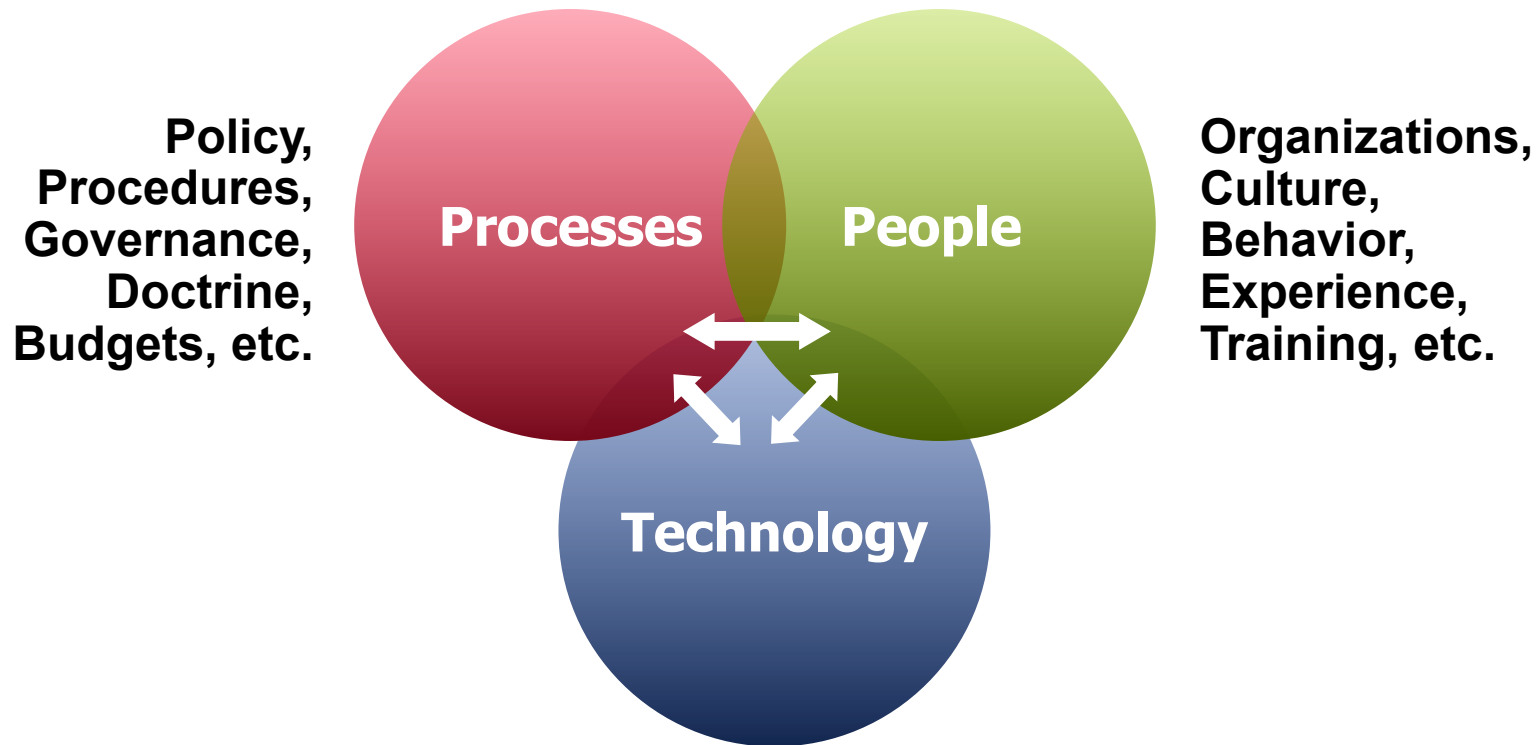
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What is the Need for SCOPE?



- **Presenting an overview of the use and value of the SCOPE Model methodology for interoperability assessment of complex networked enterprises**
 - Such as those used by the Ground Systems community
- **Large and complex systems are increasingly called upon to act and interact in a more networked and connected environment**
 - The modern world is increasingly more distributed and complex, resulting in ever-increasing difficulty of achieving acceptable interoperability of such systems
- **SCOPE has been developed as an aid to understanding the complexity in development and integration of such systems**

SCOPE is not just about Technology!



**Communication Networks & Computer IT Infrastructure,
Data/Object Models, Semantics/Meaning, Application Protocols**

*SCOPE Considers Interaction of People, Processes, and
Technology in a Complex Networked Environment*

Why Interoperability Assessment?



- **Stakeholders want to have access to the right capabilities, where and when needed and at an affordable cost**
- **Networks of systems and people potentially provide many benefits, but may not work readily with each other-- Interoperability of such systems and people is typically constrained**
 - **Stakeholders often desire the improved efficiencies and other benefits of such networked systems but may not know or fully understand all their interoperability requirements**
 - **For example: complex networks such as Systems of Systems, virtual endeavors, global or regional collaborative activities, and coalitions**

Why Interoperability Assessment?



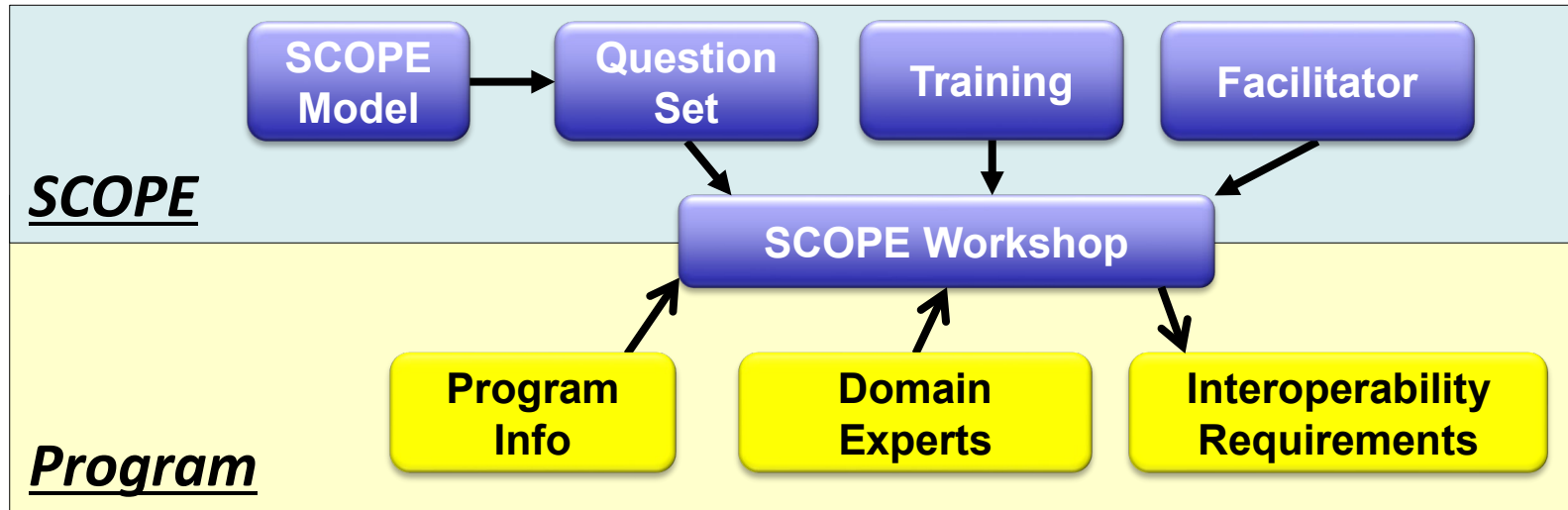
- **Such interoperability usually encompasses organizational, personnel, and process characteristics as well as hardware and software architecture, including the effects of intended changes on these items**
- **Therefore, a more comprehensive understanding of stakeholder interoperability goals and needs helps to reduce RISK and control expectations early in the life cycle**

What is SCOPE?

- **SCOPE Helps to Understand those Risks!**
 - System-of-Systems, Capabilities, Operations, Programs, and Enterprises (SCOPE) “Model”
- **Not a Computer Model**
 - Structured Analysis using Subject Matter Experts
 - Not “One Size Fits All”
 - Tailored to meet stakeholder needs
- **Goal: Validated Needs for Networked Capability**
 - SCOPE is NOT a set of prescriptive requirements
 - SCOPE helps obtain consensus across multiple viewpoints
 - With focus on integration and interoperability
 - In a specific range of environments
 - Within constraints (e.g. Budgets & Schedules)



What is SCOPE?



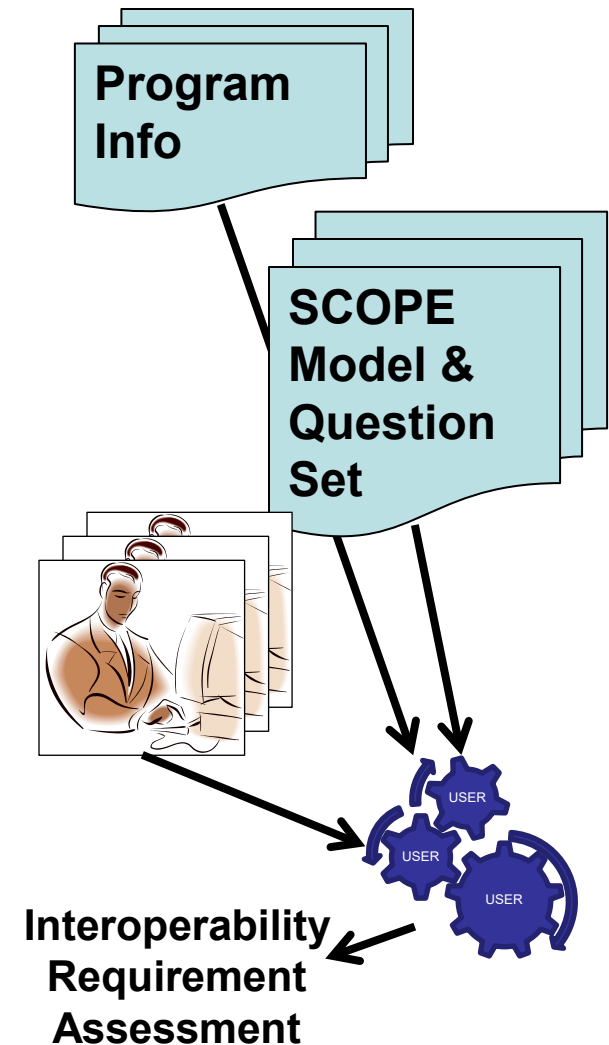
SCOPE Is...

- Based on Attributes and Characteristics of Interoperable Systems, People, and their Processes
- A set of tailorable 'Attribute Questions' derived from the above
- A Methodology to fully assess and characterize Interoperability Requirements, Conflicts, And Constraints

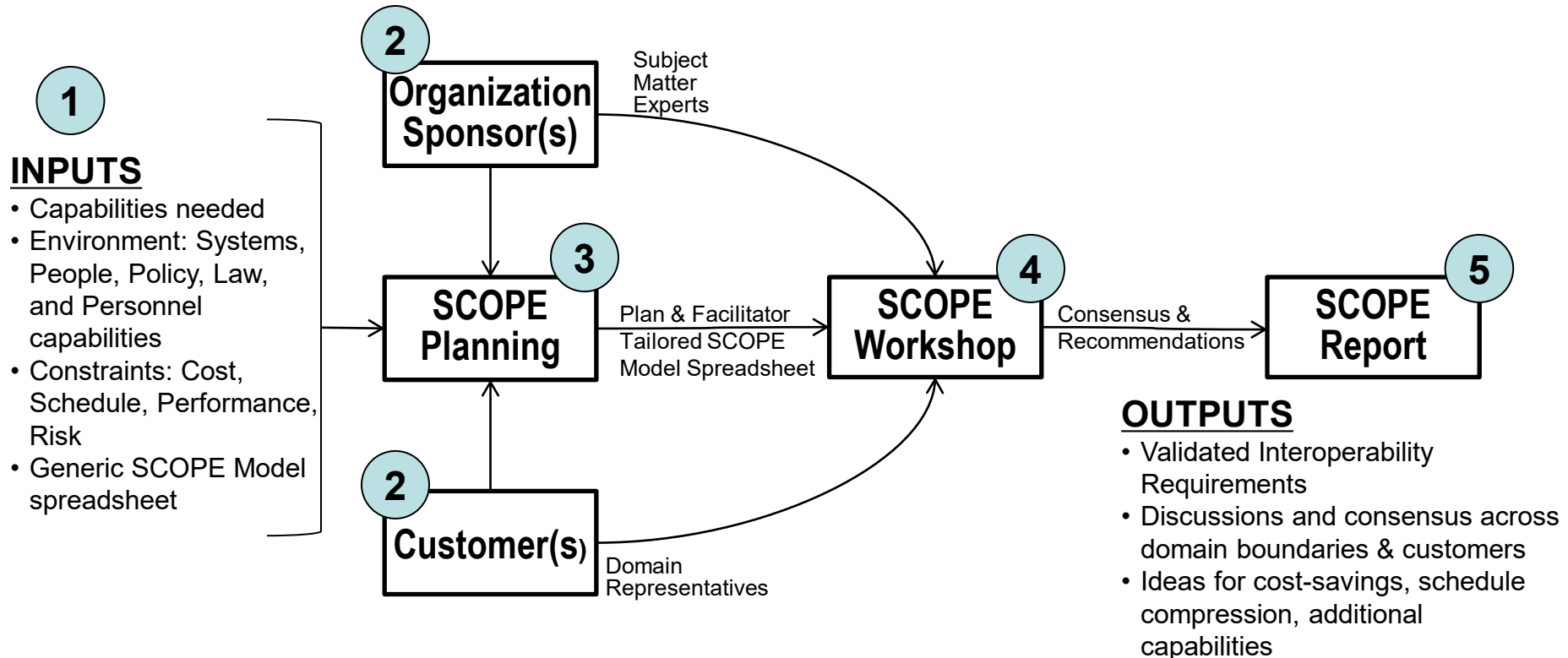
*SCOPE version 1 is publicly available (including Practitioner's Guide)
SCOPE version 2 is under development by The SCOPE Working Group*

The SCOPE Methodology

- **SCOPE Applies a Detailed, Multi-element Definition of Tailorable Attributes of Interoperable Systems and Enterprises**
 - Includes All Core Attributes
 - Not Just Technology, But Also People, Process, & Technology Interactions
- **Participation Of Users and Designers is Essential**
- **Uncovers Unknown, Unanticipated, or Under-Appreciated Interoperability Requirements**
 - Characterizes Conflicts and Constraints
- **Completely Tailorable to Program Needs**



Typical SCOPE Workshop Flow



1. Collect Needed Information and Documentation
2. Identify the Participants
3. Plan the Workshop : Select and Tailor the Question Set
4. Conduct the Workshop (Between 4 hours to about 4 days)
5. Document the Results

Summary



- 1. The goal of using SCOPE is to obtain validated, improved, more complete, better understood, and shared assumptions, constraints, and requirements for INTEROPERABILITY**
- 2. SCOPE helps stakeholders to better explore and understand their needs for the endeavor on which SCOPE is used**
- 3. SCOPE is tailorable to meet specific endeavor needs**
- 4. For more information contact
The SCOPE Working Group: scope@engsem.com
or review <https://engineeringsemantics.com/scope.html>**